

Leaf-tailed geckos from *Uroplatus* genus: keeping and breeding at BION Terrarium Center

Tkachev D., Marushchak O., Samus A., Ivanuna A., Kivkova L., Piatov M.

The fashion for keeping of one or another species of reptiles is constantly changing, thus making certain "waves of popularity". We have already witnessed a fantastic popularity of green iguanas, eyelash geckos and bearded lizards, which today remain mainly of interests to hobbyists.

There are a few specialized interest groups in herpetoculture now — desert lizards, geckos of different families, chameleons in general, and Parson's chameleons in particular. The list can be continued on several pages. Some groups on Facebook are quite popular and have thousands of sympathizers. The professional level of their participants is rising. At present there are more and more educated people, sophisticated keepers and experienced breeders in such groups.

Some FB groups unify amateurs of wide variety of reptile families. For example, in a group of DESERT LIZARDS – Iguanidae & Agamidae, and LARGE LIZARDS, ARBOREAL LIZARDS, VENOMOUS SNAKES etc. have their own audiences as well. Each group has its own experts and authorities, who undoubtedly are the catalysts for the growth of these communities and influence the popularity of certain species.

This article deals with our experience in keeping and breeding of 11 *Uroplatus* species at BION Terrarium Center. In fact, leaf-tailed geckos have been on the cutting edge for the last 10 years and their popularity still continues to grow, uniting their sympathizers in Europe, North America, Japan and other parts of the world. "Leaf-tailed" people communicate actively through the Internet and reptile fairs.



Uroplatus phantasticus



Uroplatus sikorae

In our opinion, the reasons for popularity of leaf-tailed geckos in herpetoculture are as follows:

1. AVAILABILITY. For a long period of time there had been official export of many species from Madagascar. Interestingly, later new species were subsequently selected from a number of previously imported nominative species, such as:

- 1) *Uroplatus giganteus* from *Uroplatus fimbriatus*;
- 2) *Uroplatus finiavana* from *Uroplatus ebenai*;
- 3) *Uroplatus sameiti* from *Uroplatus sikorae*.

2. HISTORY OF SUCCESSFUL BREEDING. Leaf-tailed geckos, previously considered difficult to be bred using modern keeping technologies and as the relevant experience was acquired by amateurs and experts, have regularly bred in captivity. Information on successful keeping of this group of geckos has become available to

a wide range of keepers. Quality printed sources (books and magazines), specialized Internet sources (websites, forums, FB groups) make things easier. Personal communication on reptile is another important source of information.

3. UNUSUAL APPEARANCE AND COLLECTION-RELATED VALUE. As of today 13 species of leaf-tailed geckos have been described. Most of them have subspecies and interesting color morphs. There is no doubt that we are expecting new discoveries on Madagascar (the 4th largest island in the world). Different leaf-tailed geckos' species differ dramatically by size, appearance and coloring. Just compare

Uroplatus lineatus, *U. piechmanni*, *U. phantasticus* and *U. giganteus*! In addition, some species can greatly vary by their color (*U. phantasticus*, *U. henkeli*, *U. samietzi*, *U. giganteus*, etc.). Thus, already today, for a discerning fan, the possibilities of expanding their own collection are almost unlimited. Rarity of a certain species is the only restriction, and hence the cost of a number of species, forms and morphs.

4. **RARITY.** Many hobbyists like to work with endemic fauna's representatives, because their rarity increases their value.

5. **UNIQUE ABILITY TO MIMICRY** is another advantage of these geckos' appearance, amazing both ordinary people and experienced keepers.

6. **COMPACT KEEPING** — one can keep an impressive collection of these lizards even in a small room with proper ergonomics.

7. **ELECTRICITY LIMIT.** Need for electricity is quite limited. Most of leaf-tailed geckos live in rain forests of the Eastern and North-Eastern coast. Also, all of them are nocturnal species.

WORKING WITH *UROPLATUS* SPP. AT BION TERRARIUM CENTER

As of early September 2017, 11 of 13 species of leaf-tailed geckos are successfully kept and bred at BION Terrarium Center, Kiev, Ukraine. Please see detailed information about keeping and breeding each species at BION Terrarium Center below.

Northern flat-tailed gecko (*Uroplatus alluaudi* Mocquard, 1894)

This species is one of the least investigated representatives of the *Uroplatus* genus, which was successfully bred at the BION Terrarium Center. At least, we became the first to publish detailed information on the breeding of this species in captivity.



U. alluaudi is one of the smaller species of the genus. Snout-to-vent length (SVL) is 65–80 mm, tail length (TL) is 35–40 mm (total length 100–120 mm). Total length of juveniles is 40–60 mm. The head is large, moderately flattened and ends in a short, rounded snout. 13–16 supralabials are present and the rostral scale is undivided. The body is slightly cylindrical and a bit flattened. Coloring varies from beige to hazel brown with diffuse dark brown to black patterns and sometimes pale (cream to white) cross-bands. The tail

is comparatively short and moderately serrated, its distal part tapers towards the tip. Males can be identified with certainty by means of their hemipenial bulges (Svatek, van Duin, 2001).

Keeping. We keep adults in 45*45*60 cm terrariums, babies — in terrariums of not less than 30*30*30 cm. The decoration of the terrarium includes horizontal and vertical branches of medium thickness, lianas, layers of bark for climbing, hollows, living plants and shards as shelters. Ground — crushed bark, covered with dry oak leaves.

Lighting. Zoo Med 5 UVB lamp is used during breeding season for 10 hours a day; during resting period (October – March) for 6–8 hours a day.

Temperature. Daytime temperature is +21 – +24 °C, at night – +19 – +21 °C; at the time of wintering – +17 – +20 °C. 40W incandescent lamp is used for heating. At the heating point, the temperature should not exceed +29 °C. During the resting period, we turn on the heating for 2 to 5 hours.



Humidity. Humidity level is maintained at 60–80% with double spraying during the day.

Diet. The diet for adults consists of Turkestan cockroaches (*Shelfordella tartara*), snout moths and crickets with the size of fodder insects not more than 15 mm. We offer 1–2 fodder insects to each lizard 1–2 times a week. If the animal shows signs of obesity, the frequency of feeding is reduced to 1 time per 2 weeks. There is always a bowl with fresh drinking water in the terrarium.



The diet for babies consists of the same insects as for adults but the size is different. The size of fodder insects is not more than 7 mm. We add mineral supplements "Repashy" with and without D3 with every second feeding. Also there are always pieces of chalk in the terrarium.

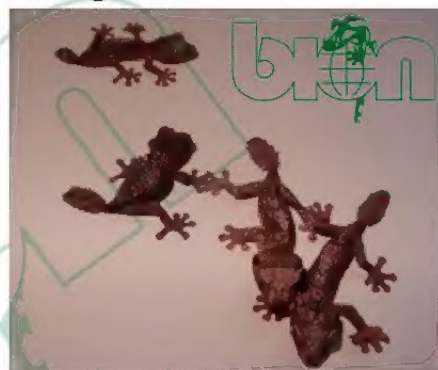
We add young snails with soft shells to the diet to supply calcium resources during ovogenesis to females at mating period. After each oviposition, we put additional calcium-containing additives in liquid form — calcium gluconate or calcium chloride (0.2 ml per individual per day,

during 5 days).

In case of problems with shedding for babies and juveniles we spray them with a solution of the liquid vitamin and mineral product "Chiktonik" twice a week (2–5 sessions per day with concentration: 1 part of vitamin per 100 parts of water).

***Uroplatus alluaudi* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 18 months.
2. Breeding season: from April to September.
3. We keep adults in pairs all year round.
4. Number of clutches during 1 breeding season: 3–5 (1–2 eggs in each).
5. Percentage of hatching: 27%.
6. Duration of gestation: 20–25 days.
7. Incubation period: 74–130 days.
8. Incubation temperature: +23 – +24 °C.
9. Substrate for incubation: vermiculite.
10. Humidity during incubation: 75–85%.



Spearpoint leaf-tailed gecko (*Uroplatus eburnei* Boettger, 1879)

U. eburnei is one of the smallest species of the genus. SVL is 55–67 mm, TL is 15–18 mm (total length 70–85 mm). Total length of juveniles is about 30 mm. The head is not flattened and terminates in a



short, rounded snout. 20–22 supralabial scales are present and the tip of the upper jaw (rostrale) is not divided. The body is leaf-shaped and laterally compressed. Some spiny scales are arranged along the dorsal spine, on the elbows and above the eyes. Coloring varies from beige to red and chocolate brown with sometimes cream dorsal spine that makes them a perfect example of phytomimesis. Males are easy to sex thanks to their hemipenial bulges. Also

males usually have longer tails and fringes on them are frequently serrated (Svatek, van Duin, 2001).

Keeping. We keep adults in 45*45*45 cm terrariums. Babies are kept in terrariums or plastic Ferplast boxes of not less than 30*15*20 cm during first 1.5–2 months since birth. The decoration of the terrarium includes horizontal and vertical thin branches, lianas and living plants. Ground — crushed small pieces of bark.

Lighting. Zoo Med 5 UVB lamp is used during breeding season for 10 hours a day; during resting period — for up to 8 hours a day.

Temperature. Daytime temperature is +24 °C, at night – +19 – +22 °C; at the time of wintering – +24 °C. Heating with 40W incandescent lamp is used only during wintering months to maintain daytime temperature. During breeding season no additional heating is required.



Humidity. Humidity level is maintained at 70–80% with double spraying during the day.

Diet. Menu for adults contains Turkestan cockroaches (*Shelfordella tartara*) and marble cockroaches with the size of not more than 12 mm. We offer 2–3 insects to 1 individual 1–2 times a week. If the animal shows signs of obesity, the

frequency of feeding is reduced to 1 time per 2 weeks. There is always a bowl with fresh drinking water in the terrarium.

List of fodder insects for babies is the same as for adults. The size is not more than 7 mm. Frequency of feeding of juveniles is: 3 insects per individual 2–3 times a week before age of 1.5 months; 3 insects per individual 1–2 times a week after age of 1.5 months.

Pieces of chalk are always present in the terrarium. With every second feeding we add mineral supplements "Reptivit with D3", "Reptivit without D3", Reptical and also give "Mineral All-in-One" by "Repashy" 1 time a week by powdering fodder insects.

We add young snails with soft shells and crickets to the feeding list of females during gestation. Also we introduce additional calcium-containing additives in liquid form: calcium gluconate or calcium chloride (0.2 ml per individual per day, during 5 days), - after each oviposition.



If problems with shedding in young individuals are detected, we spray them with a solution of the liquid vitamin and mineral product "Chiktonik" twice a week (2–5 sessions per day with concentration: 1 part of vitamin per 100 parts of water).

***Uroplatus ebenaui* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 24–30 months.
2. Breeding season: from April to September.
3. We keep adults in pairs or at a ratio 1:2 according to the size of the terrarium all year round.
4. Number of clutches during 1 breeding season: 2–3 (1–2 eggs in each).
5. Percentage of hatching: 77%.
6. Duration of gestation: 30 days.
7. Incubation period: 75–90 days.
8. Incubation temperature: +24 – +25 °C.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 75–85%.



Common flat-tail gecko (*Uroplatus fimbriatus* (Linnaeus, 1758))

U. fimbriatus is one of the largest species of the genus. SVL is 140–190 mm, TL is up to 140 mm (total length 300–330 mm). Total length of juveniles is nearly 60 mm. General build is rather flattened, with exceedingly long skull. 28–40 supralabial scales may be present. The large protruding eyes are a very spectacular feature of this species. A narrow dermal fringe runs along the whole body. The coloring of these lizards is extremely variable. The basic color is often gray, yellowish or reddish brown with diverse patterns, such as patches and bands. 11–13 pairs of scratched ribs are another unmistakable feature of



for adults and medium size for young individuals are used as soil.

Lighting. Zoo Med 5 UVB lamp is used during spring-summer season for 10 hours a day; during resting period (autumn — winter) — for 8 hours a day.

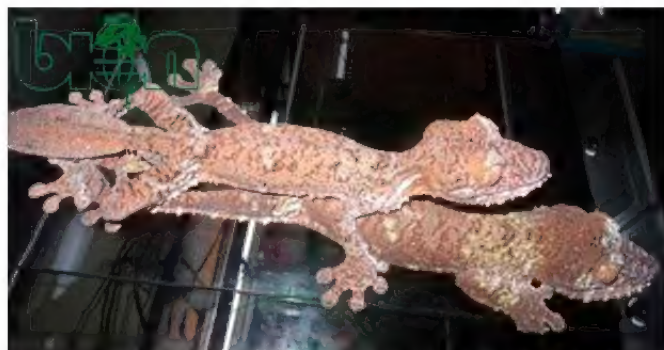
Temperature. Daytime temperature is $+24 - +26^{\circ}\text{C}$, at night $+19 - +22^{\circ}\text{C}$; at the time of resting period $+18 - +23^{\circ}\text{C}$. Heating (using 40W incandescent lamp) is switched on to maintain the basic temperature requirements. The temperature in the basking point should not exceed $+29^{\circ}\text{C}$, as overheat is deadly dangerous for all leaf-tailed geckos.

Humidity. Humidity level for both young and adult specimens is maintained at the level of 70–80% with double spraying during the day.



this species. Both sexes show similar coloring. Males can be easily distinguished from females due to the presence of hemipenial bulges (Svatek, van Duin, 2001).

Keeping. We keep adult specimens in terrariums of not less than $75*70*45$ cm. Babies live in terrariums of not less than $60*45*45$ cm since birth. There are always horizontal and vertical branches of medium thickness, lianas, bark for climbing and living plants for moisture retention inside the terrarium. Pieces of bark of large size



Diet. We feed adults with winged locusts, Turkestan cockroaches (*Shelfordella tartara*), marble cockroaches (lizards are fed with tweezers, because this kind of cockroach buries into the bark and pollutes the terrarium) and crickets. Length of insects is not more than 20–25 mm. We offer 2–3 insects to 1 individual 1–2 times a week. If the signs of obesity are seen, the number of feedings is reduced to 1 time per 2 weeks. There is always a bowl with fresh drinking water in the terrarium.

List of fodder insects for babies is the same as for adults with the food size of not more than 10–15 mm. Before the age of 1.5 months 3 fodder insects are offered to one individual 2–3 times a week. After the age of 1.5 months we offer the same amount of food per individual 1–2 times a week.

Pieces of chalk are always present in the terrarium. Such vitamin supplements as "Repashy" with and without D3 are added to the diet with every other feeding by powdering of fodder insects.

We add young snails with soft shells to females' menu during ovogenesis.

***Uroplatus fimbriatus* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 24–30 months.
2. Breeding season: from April to September.
3. We keep adults in pairs all year round.
4. Number of clutches during 1 breeding season: 3–4 (1–2 eggs in each).
5. Percentage of hatching: 30%.
6. Duration of gestation: 30–35 days.
7. Incubation period: 90–120 days.
8. Incubation temperature: $+22 - +24^{\circ}\text{C}$.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 75–85%.



***Uroplatus finiaavana* Ratsoavina, Louis jr., Crottini, Randrianiana, Glaw & Vences, 2011**



U. finiaavana is one of the smallest species of the genus. SVL is 70–80 mm, TL is up to 50 mm (total length 120–130 mm). Total length of young individuals is 40–50 mm. The head is not flattened with a short, rounded snout. The body is leaf-shaped and laterally compressed making this species also a good example of phytomimesis. These geckos are very similar to *U. ebenau*, but are larger in size with considerably longer tails, which are shorter than tails of *U. phantasticus*. Often they are called “long-tailed ebenau”. Their basic color consists of diverse reddish brown hues which bear a well-developed pattern recalling the

veins of dead leaves (Svatek, van Duin, 2001). Males are easy to sex thanks to their hemipenial bulges, tear-like small white drop-shaped spots underneath the eyes, black spots on the nose and spine and more tubercular scales.

Keeping. We keep these geckos in terrariums of not less than 70*50*50 cm for adults and of not less than 30*30*30 cm for juveniles. Hatchlings are kept in groups of not more than 3 animals. We put small branches with dried leaves, imitating shrubs, a pair of branches of medium thickness and Benjamin figs to retain moisture during spraying inside the terrarium. As a soil we use small slices of bark covering the bottom of the terrarium.

Lighting. Zoo Med 5 UVB lamp is used during spring-summer season for 10 hours a day; during autumn-winter period – for 8 hours a day.

Temperature. At day temperature is +22 – +25 °C, at night – +18 – +21 °C. During resting period temperature figures are the same. We don't use additional heating.



Humidity. Humidity level is 70–80% with double spraying during the day.

always a bowl with fresh drinking water in the terrarium.

We feed young geckos with Turkestan cockroaches (*Shelfordella tartara*) and crickets that are not bigger than 3–7 mm in size. We offer 3 insects to one young individual 2–3 times a week.

During each second feeding we powder fodder insects with vitamin supplementation "Repashy" with and without D3. Also, there are always pieces of chalk inside the terrarium available for our animals at any time.

***Uroplatus finiaavana* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 18 months.
2. Breeding season: from April to September.



3. We keep adults in pairs or at a ratio 2:2 according to the size of the terrarium all year round.
4. Number of clutches during 1 breeding season: 2–3 (1–2 eggs in each).
5. Percentage of hatching: 60%.
6. Duration of gestation: 20–25 days.
7. Incubation period: 85–110 days.
8. Incubation temperature: +22 – +25 °C.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 75–85%.

Giant leaf-tailed gecko (*Uroplatus giganteus* Glaw, Kosuch, Henkel, Sound & Böhme, 2006)



U. giganteus is one of the biggest species of the genus. Its SVL is 210–230 mm, TL is up to 110–120 (total length 310–325 mm). Total length of young geckos is 90–110 mm. *U. giganteus* at first glance recall typical *U. fimbriatus*, but the color of iris is plain cream to white at daytime and develops a fine red stripe pattern after nightfall. General build is rather flattened, with long skull and 28–40 supralabial scales. The dorsal basic color is white to beige; large brown to black bands and patches are

scattered from the head to the tip of the tail. A broad dermal flap runs along the body with enlarged serrated extensions distributed at regular intervals. Males have well-seen hemipenial bulges (Svatek, van Duin, 2001).

Keeping. We keep these big lizards in 90*65*120 cm terrariums. During the first 1.5–2 months of life we keep babies in 30*30*30 cm terrariums with further transplantations to bigger boxes. The decoration of the terrarium consists of large vertical and horizontal branches for adult individuals and medium vertical and horizontal branches for juveniles, as well as lianas, living or artificial plants. We use big pieces of bark for adults, and small bark slices for young individuals as soil components.



Lighting. We use Zoo Med 5 UVB lamp for lighting: at spring-summer season for 10 hours a day; at autumn-winter reposing period for 8 hours a day.



Temperature. We keep *U. giganteus* with daytime temperature of +24 – +26 °C, and nighttime temperature – +20 – +23 °C. During autumn-winter period we switch on 40W incandescent lamp for heating for 2–5 hours per day. The temperature at the basking point does not exceed +29 °C. During other part of the year (April – October) no heating is used.

Humidity. For both juveniles and adults we maintain air humidity of 60–80% with double spraying during the day.

Diet. For adult animals the menu consists of big locusts, Turkestan and marble cockroaches and crickets. Fodder insects' size is not more than 25 mm. We offer 1–2 insects per animal 1–2 times a week and reduce the feeding sessions' frequency to 1 time per 2 weeks, if signs of obesity are seen. For

females during ovogenesis we offer soft-shelled juvenile snails. There is always a bowl with fresh drinking water in the terrarium.



Diet of juveniles is the same as for adults with the size of food not bigger than 10 mm. Frequency of feeding: 3 fodder insects per 1 young gecko 3 times a week.

Pieces of chalk and small bowl with calcium with D3 in powder form are always present in the terrarium. Vitamin supplements as "Repashy" are introduced to the diet with every other feeding in the form of powdering of fodder insects.

***Uroplatus giganteus* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 2,5 years.
2. Breeding season: from April to September.
3. We keep adults in pairs all year round.
4. Number of clutches during 1 breeding season: 3–5 (1–2 eggs in each).
5. Percentage of hatching: 80%.
6. Duration of gestation: 30–50 days.
7. Incubation period: 3.5–4.5 months.
8. Incubation temperature: can be of two regimes: 1) daytime temperature – +24 – +25 °C, nighttime – +22 – +23 °C; 2) daytime temperature – +23 – +24 °C, nighttime – +21 – +22 °C.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 75–85%.



Günther's leaf-tail Gecko (*Uroplatus guentheri* Mocquard, 1908)



U. guentheri is a medium-sized species of the genus. Its SVL is 70–95 mm, TL is 30–55 mm (total length 100–150 mm). Total length of juveniles is about 50 mm. The large head ends with a blunt, rounded snout. 16–19 supralabial scales are present, rostral scale is divided. The cylindrical body is rather

flattened and lacks dermal fringe flaps. Small conical scales are scattered all over the dorsal surfaces. The basic coloration is beige to grayish brown with a fine vertebral line running from the back of the head to the tip of the tail with some irregular dark cross-bands. Ventral part of the body and limbs are plain white. This species possesses deep armpit pockets. Original tails show a slightly serrated fringe. Males can be easily sexed by the presence of well-seen hemipenial bulges (Svatek, van Duin, 2001).

Keeping. We keep geckoes of this species in terrariums of 45*45*60 cm for adults and of 35*30*35 cm for babies (not more than 2–3 young individuals are kept in 1 terrarium at once). The decoration of the terrarium provides shelters in the form of hollow branches (bamboo, pieces of bark), fragments of bark with hollows, climbing branches, living plants (small-leaved figs) or artificial plants. We make ground for adults out of 4–7 cm layer of small bark slices covered with dry oak leaves. For babies we use paper towels as a substrate.

Lighting. We use Zoo Med 5 UVB lamp during 9 hours a day at spring-summer season and during 7 hours a day at autumn-winter resting period.

Temperature. For this species we maintain daytime temperature at +24 °C and nighttime temperature – +19 – +21 °C. During autumn-winter period we slightly reduce these figures: at daytime

— +20 — +22 °C, nighttime — +17 — +19 °C. During resting season we provide additional heating with 40W incandescent lamp for 1–2 hours per day. During breeding season heating is not used if basic temperature requirements are maintained. While imitating dry season in summer we provide temperature at +26 °C during 2–3 weeks.



Humidity. At wintering period we imitate a rainy season providing humidity level of 70–90% through 2–3 times spraying during the day. In summer we provide moisture level of 60% by 1 time sprinkling per 2–3 days, imitating dry season.

Diet. In the diet of adults we add Turkestan cockroaches (*Shelfordella tartara*), locusts and crickets (not longer than 15 mm). We offer 2–3 insects 1–2 times a week per individual. We reduce the number of feeding sessions to 1 time

per 2 weeks if signs of obesity are seen. We offer soft-shelled juvenile snails for females during ovogenesis. There is always a bowl with fresh drinking water in the terrarium.

Menu for juveniles consists of Turkestan cockroaches (*Shelfordella tartara*) and crickets with the size of not more than 5 mm. Frequency of feeding: 3–4 fodder insects per individual 2–3 times a week. Fodder insects are powdered with calcium powder before each feeding of babies.

For adults fodder insects are powdered with calcium powder 1–2 times per month. We add vitamin supplements "Repashy" with and without D3 with the same frequency. Pieces of chalk are always present in the terrarium.

***Uroplatus guentheri* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 1,5 years.
2. Breeding season: from April to September.
3. We keep adults in pairs all year round.
4. Number of clutches during 1 breeding season: 3–5 (1–2 eggs in each).
5. Percentage of hatching: 50%.
6. Duration of gestation: 30–35 days.
7. Incubation period: 83–109 days (1 incubation temperature regime); 100–110 days (2 incubation temperature regime).
8. Incubation temperature: can be of two regimes: 1) daytime and nighttime temperature— +25 °C; 2) daytime temperature — +22 — +24 °C, nighttime — +19 — +21 °C.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 70–80%.



Henkel's leaf-tailed gecko (*Uroplatus henkeli* Böhme & Ibish, 1990)

U. henkeli is one of the biggest species of the genus. Its SVL is 120–190 mm, TL is 70–100 (total length 260–290 mm). Young geckos of this species have total length of 85–90 mm. The overall build of these animals is rather flattened. A short dermal fringe runs along the whole body. Head is comparatively large and flattened and terminates in a long, pointed snout. Average number of supralabial scales is 28–40. The coloring of these geckos is very variable: at daytime both sexes are pale beige to whitish, but a marked coloristic sexual dimorphism becomes manifest at night: males show a paler or darker basic color with a pattern of large dark brown to black patches, whereas females are paler with numerous fine



dark spots. Also males have well-recognized hemipenial bulges at the beginning of the tail. (Svatek, van Duin, 2001).

Keeping. We keep adult individuals in terrariums of 75*70*45 cm. We use 60*45*45 cm terrariums for keeping juveniles. The decoration of terrarium includes vertical and horizontal branches of medium thickness, lianas if possible,

living or artificial plants, mainly figs, and big slices of bark for climbing. We use medium-sized pieces of bark as a substrate.

Lighting. At spring-summer period we switch on lighting for 10 hours a day; at autumn-winter period – for 8 hours a day. For this purpose we use Zoo Med 5 UVB lamp.

Temperature. For this species we maintain daytime temperature at +25 – +27 °C, and nighttime temperature – +19 – +22 °C. During spring-summer period we use 40W incandescent lamp for heating. Temperature at basking point is +28 – +29 °C and not more. During wintering no heating is used.

Humidity. For both young and adult specimens we maintain humidity of 70–80% with double spraying during the day.

Diet. Fodder insects' list for adult geckos consists of winged locusts, Turkestan cockroaches (*Shelfordella tartara*), marble cockroaches (we use tweezers to feed lizards with this kind of food, to not let them inhabit the terrarium) and crickets. Fodder insects of not more than 20–25 mm are offered to one separate individual 1–2 times a week at a rate of 2–3 pieces. We reduce the number of feeding sessions if signs of obesity are observed. We add soft-shelled juvenile snails to the menu of females during ovogenesis. There is always a bowl with fresh drinking water in the terrarium.



Diet of juveniles is similar to that of adults with the size of insects of not more than 10–15 mm. Feeding sessions' frequency: before age of 1.5 months – 3 fodder insects per 1 young gecko 2–3 times a week; for animals older than 1.5 months – 3 fodder insects per 1 individual 1–2 times a week.

We powder fodder insect with calcium powder every other feeding. Vitamin supplementation "Repashy" with and without D3 is added to the diet once a week. Pieces of chalk are always present in the terrarium.

In case of problems with shedding in juveniles, we spray them with a solution of the liquid vitamin and mineral product "Chiktonik"

twice a week (2–5 sessions per day with concentration: 1 part of vitamin per 100 parts of water).

***Uroplatus henkeli* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 24–30 months.
2. Breeding season: from April to September.

3. We keep adults in pairs all year round.
4. Number of clutches during 1 breeding season: 3–4 (1–2 eggs in each).
5. Percentage of hatching: 75%.
6. Duration of gestation: 30–40 days.
7. Incubation period: 75–90 days.
8. Incubation temperature: +25 – +26 °C.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 60–80%.



Satanic leaf-tailed gecko (*Uroplatus phantasticus* Boulenger, 1888)



U. phantasticus is one of the smallest leaf-tailed geckos. SVL is 55–70 mm, TL is about 40 mm (total length 100–110 mm). The head is not flattened and terminates in a rounded snout. A prominent row of scales in the interorbital and the occipital regions forms a V pointing on the neck. Body is laterally compressed allowing these creatures to be a perfect example of phytomimesis even within the genus. Their coloring is extremely variable: from gray to chocolate brown, beige, orange and red, sometimes with greenish spots or cream to black vertebral lines. Male are easy to sex due to the presence of hemipenial bulges. Their tails

imitate the shape of a leaf (Svatek, van Duin, 2001).

Keeping. We keep these geckos in 70*50*50 cm terrariums for adults and 30*30*30 cm terrariums for juveniles. There are many thin branches, often with dried leaves, imitating shrubs in the terrarium. Sometimes we put Benjamin figs inside to retain moisture on the leaves during spraying. We use small bark slices as substrate for adults while for babies we use paper towels instead of soil.

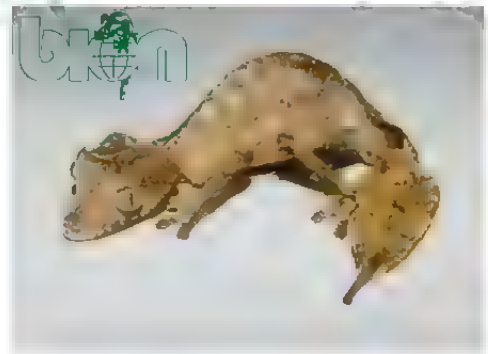
Lighting. At spring-summer period we provide lighting for 10 hours a day; at autumn-winter period – for only 8 hours a day using Zoo Med 5 UVB lamp.

Temperature. Daytime temperature is +22 – +25 °C, nighttime temperature – +18 – +21 °C. These levels are maintained without additional heating during both breeding and resting seasons.

Humidity. 70–80% humidity is kept due to double spraying during a day.

Diet. Diet for adult geckos: locusts, Turkestan cockroaches (*Shelfordella tartara*) and crickets. The size of fodder insects is not more than 10–12 mm. They are offered at a rate of 2–3 pieces for one individual 1–2 times a week. We reduce the number of feeding sessions to 1 time a week if signs of obesity are observed. During ovogenesis females are supplied with juvenile snails. There is always a bowl with fresh drinking water in the terrarium.

Diet for young individuals: Turkestan cockroaches (*Shelfordella*



tartara) and crickets. The size of fodder insects is not more than 3–7 mm. We feed babies 2–3 times a week at a rate of 3 fodder insects per individual.

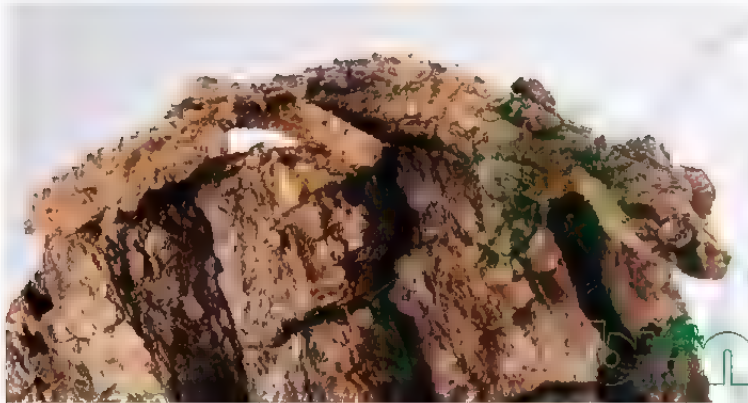
We add vitamin supplementation "Repashy" with and without D3 to our lizards' diet every other feeding. Pieces of chalk are constantly present in the terrarium.

***Uroplatus phantasticus* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 18 months.
2. Breeding season: from April to September.
3. We keep adults in pairs or at a ratio 2:2 according to the size of the terrarium all year round.
4. Number of clutches during 1 breeding season: 2–3 (1–2 eggs in each).
5. Percentage of hatching: 70%.
6. Duration of gestation: 20–25 days.
7. Incubation period: 85–100 days.
8. Incubation temperature: +22 – +25 °C.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 75–85%.



Bark leaf-tailed gecko (*Uroplatus pietschmanni* Böhle & Schönecker, 2004)



U. pietschmanni is one of medium-sized representatives of the genus and was described only in 2004. SVL is 90–100 mm, TL is 40–50 mm (total length 150–170 mm). Total length of young animals is 50–60 mm. These geckos have flattened bodies, large heads and well-developed spiny scales found in the occipital area. The dorsal faces of the body, limbs and tail are scattered with spiny scales of variable sizes. The fringe of the tail

heavily undulates, so that its contour resembles an oak leaf. The dorsal basic color consists of various brown hues resulting in a bark-like pattern. A whitish line runs from the snout tip to the eye sockets. Irises are partially white. Males can be easily sexed by the presence of hemipenial bulges (Svatek, van Duin, 2001).

Keeping. We keep these geckos in 70*50*50 cm terrariums for adults and 30*30*30 cm terrariums for young geckos. There are medium-sized vertical and horizontal branches, lianas, pieces of bark for climbing, hollows and hiding places as well as living plants in the terrarium. Small-sized pieces of bark are used as a substrate.

Lighting. We provide lighting for up to 10 hours a day during breeding season and 6–8 hours a day during the rest of time, using Zoo Med 5 UVB lamp.

Temperature. Daytime temperature is +22 – +26 °C, nighttime temperature – +16 – +20 °C. 40W incandescent lamp is used for additional heating, with the maximum basking place temperature of +29 °C.

Humidity. Humidity is 60–80% both for babies and adults with double spraying during the day.

Diet. Diet for adults consists of Turkestan cockroaches (*Blatta lateralis*), butterflies of Pyralidae family and crickets. The size of insects is not more than 15 mm. Food is provided 1–2 times a week by 1–2 insects per head. If the certain animal has a tendency to obesity we limit the number of feeding



sessions. During ovogenesis we offer juvenile snails to females. In the terrarium there is always a bowl with fresh drinking water.



Diet for babies is combined of Turkestan cockroaches (*Shelfordella tartara*), butterflies of Pyralidae family and crickets. The size of insects is not more than 7 mm. Food is provided 2–3 times a week by 3 insects per head.

We sprinkle fodder insects with calcium and vitamins every other feeding. We use Zoo Med “Reptivit with D3” and “Reptivit without D3”, Reptical. Also we give “Mineral All” from “Repashy” one time per week. There are pieces of chalk available for geckos in the terrarium.

If problems with shedding in young animals are detected we spray them with vitamin product “Chiktonik” 2–5 times every 2–3 days until improvement. Concentration of the

solution: 1 part of vitamin for 100 parts of water.

***Uroplatus pietschmanni* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 18 months.
2. Breeding season: from April to September.
3. We keep adults in pairs all year round.
4. Number of clutches during 1 breeding season: 3–5 (1–2 eggs in each).
5. Percentage of hatching: 27,5%.
6. Duration of gestation: 30–40 days.
7. Incubation period: 3,5–4 months.
8. Incubation temperature: +22 – +24 °C.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 75–85%.

Southern flat-tail gecko (*Uroplatus sameiti* Bohme & Ibish, 1990)

U. sameiti was separated from another species, *U. sikorae*, and is one of medium-sized species of the genus. Its SVL is 110–130 mm, TL is 50 mm (total length 150–160 mm). Total length of juveniles is 70–80 mm. The body is dorsoventrally flattened and a frayed dermal flap runs along the whole length. The flattened head terminates in a rounded snout. The tail bears an evenly undulating or weakly serrated fringe. Mostly, these animals show lichen patterns in coloring. The mucous membrane of buccal cave is flesh-colored. Males have well-seen hemipenial bulges (Svatek, van Duin, 2001).



Keeping. We keep adults in 70*50*50 cm terrariums and babies in 30*30*30 cm terrariums. The interior design of the terrarium has horizontal and vertical branches of medium thickness, lianas, slices of bark for climbing and living plants, which allow to retain the necessary moisture. Our animals are kept on two types of substrates: 1) soil mixed with coconut shavings, and bark layer on top of it; 2) pieces of bark with 2–3 cm layer of oak leaves covering it.

Lighting. During breeding season (spring-summer) lighting with Zoo Med 5 UVB lamp is provided for up to 9 hours a day and 7 hours a day at the resting period (autumn-winter).



Temperature. Daytime temperature is $+24 - +25^{\circ}\text{C}$, nighttime temperature $- +21 - +23^{\circ}\text{C}$. Maximum temperature at the basking place is $+26^{\circ}\text{C}$ with the use of 40W incandescent lamp. We use no additional heating at wintering period.

Humidity. Regardless of the age group humidity is maintained at 85% to be achieved by 2–3 times spraying during the day.

Diet. Adult diet: Turkistan cockroaches (*Shelfordella tartara*), winged locusts and crickets. The size of

insects is not more than 15 mm. Food is provided 1–2 times a week by 1–2 insects per head. Sometimes we offer snails to females during ovogenesis. If the certain animal has a tendency to obesity feeding we limit the number of feeding sessions to 1 time per 2 weeks. In the terrarium there is always a bowl with fresh drinking water.

For babies diet is similar to adults' fodder list with the exception of locusts. The size of insects is not more than 5 mm. Food is provided: before age of 2 months 2–3 times a week by 2–3 pieces per head; after age of 2 months 1–2 times a week by 2–3 pieces per head.

Every other feeding we add mineral and vitamin supplements "Repashy" with and without D3 by powdering of fodder insects. The presence of chalk is mandatory in the terrarium.

***Uroplatus sameiti* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 24–30 months.
2. Breeding season: from April to September.
3. We keep adults in pairs all year round.
4. Number of clutches during 1 breeding season: 3–5 (1–2 eggs in each).
5. Percentage of hatching: 80%.
6. Duration of gestation: 35–40 days.
7. Incubation period: 75–110 days.
8. Incubation temperature: $+24 - +25^{\circ}\text{C}$ at day, $+22 - +23^{\circ}\text{C}$ at night.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 75–85%.

Mossy leaf-tailed gecko (*Uroplatus sikorae* Boettger, 1913)

U. sikorae is also a medium-sized leaf-tailed gecko. SVL is 85–123 mm, TL is 65–77 mm (total length 150–200 mm). For juveniles total length is 60–70 mm. Body is strongly flattened, large head is also flattened and terminates in rounded snout. Less than 35 supralabial scales are present.



The coloring is very variable: moss green, lichen and bark color, rarely reddish. The ventral faces of the body and limbs are white to reddish with numerous fine black spots. The

iris is yellowish. A marked dermal fringe runs along the whole body. Males are easy to sex thanks to their bulging hemipenial bulges (Svatek, van Duin, 2001).

Keeping. We keep adults in 70*50*50 cm terrariums, babies are kept in 30*30*30 cm terrariums. Horizontal and vertical branches, living and plastic plants, lianas and piece of bark form the interior of the terrarium. Soil with coconut chips as a lower level and small-sized or middle-sized bark pieces, covered with dry leaf-litter (usually oak) are used as a substrate.

Lighting. We provide our animals with up to 9 hours of day illumination (with Zoo Med 5 UVB lamp) during the breeding season, and 7 hours day lighting during autumn-winter period.



Temperature. Daytime temperature is +24 – +25 °C, night temperature – +21 – +23 °C. Maximum temperature at the basking place is +26 °C with the use of 40W incandescent lamp. During wintering period heating is not needed.

Humidity. For all age groups humidity is 75–85%, which is achieved by 2–3 times spraying during the day.

Diet. Diet for adults: Turkestan cockroaches (*Shelfordella tartara*), locusts and crickets. The size of insects is not more than 15 mm. From time to

time we give them snails. Food is provided 1–2 times per week by 1–2 insects per head. If animal has a tendency to obesity (due to low activity) number of feedings is reduced. In the terrarium there is always a bowl with fresh drinking water.

Diet for babies is similar to adults' fodder list with the exception of locusts. The size of insects is not more than 5 mm. Fodder insects are offered: for specimens up to 2 months old 2–3 times a week by 2–3 pieces per head; for specimens older than 2 months 1–2 times a week by 2–3 pieces per head.

We sprinkle insects with calcium and vitamins every other feeding. We use Zoo Med "Reptivit with D3" and "Reptivit without D3", Reptical. Also we give "Mineral All-in-One" from "Repashy" one time per week. Pieces of chalk are always present in the terrarium.

If problems with shedding in young animals are detected we spray them with vitamin product "Chiktonik" 2–5 times every 2–3 days until improvement. Concentration of the solution: 1 part of vitamin for 100 parts of water.



***Uroplatus sikorae* at BION Terrarium Center. Keeping & breeding in brief.**

1. Sexual maturity: 24–30 months.
2. Breeding season: from April to September.
3. We keep adults in pairs all year round.
4. Number of clutches during 1 breeding season: 3–5 (1–2 eggs in each).
5. Percentage of hatching: 65%.
6. Duration of gestation: 30–35 days.
7. Incubation period: 75–110 days.
8. Incubation temperature: +24 – +25 °C at day, +22 – +23 °C at night.
9. Incubation substrate: vermiculite.
10. Humidity of incubation substrate: 75–85%.



In this review we briefly described the keeping and breeding of 11 species of leaf-tailed geckoes (*Uroplatus* genus) in BION Terrarium Center.

You can also check individual articles on each species on our website www.bion.com.ua

At the same time, we expect that the *Uroplatus* fans from different countries (many of whom are our friends and partners) share their unique information; we shall be happy to post it on www.bion.com.ua with reference to their authors.

It would be nice if the fans and experts from different countries share their unique information pertinent to keeping and breeding these lizards; we shall be happy to place it on BION's website with proper reference to the author.

It is by our joint efforts that we can raise the herpetoculture to a new level!

Literature

1. Frank Glaw, Miguel Vences. 2007: Field Guide to the Amphibians and Reptiles of Madagascar. Vences & Glaw Verlag GbR 3rd Edition. 496 p. Germany.
2. Sacha Svatek and Susanna van Duin. 2001. Leaf-tailed geckos – the Genus *Uroplatus*. Brahmerv Verlag, 161 p. Germany.
3. <http://www.zooclub.ru/rept/vidy/139.shtml>
4. <http://www.zoopicture.ru/uroplatus-sikorae/>
5. <http://zoodb.ru/reptilia/squamata/gekkonidae/37545-Uroplatus-sikorae.html>
6. https://en.wikipedia.org/wiki/Uroplatus_sikorae
7. <http://www.iucnredlist.org/details/172906/0>
8. <http://www.geckosunlimited.com/community/gecko-care-sheets/17665-uroplatus-phantasticus-caresheet.html>
9. <http://www.arkive.org/uroplatus/uroplatus-giganteus/>
10. <http://www.iucnredlist.org/details/172756/0>
11. <http://wondersofnature.forum.com.kz/viewtopic.php?id=15>
12. <http://www.uroplatus.org/>
13. <http://translate.google.com.ua/translate?hl=ru&sl=en&u=>
14. <http://www.uroplatus.org/&prev=search>
15. <http://geckophilia.com/forums/gekkony-afriki-madagaskara-i-prilezhaschix-ostrovov.37/>
16. <http://www.iucnredlist.org/details/178653/0>
17. <http://www.uroplatus.org/species-index/fimbriatus-group/uroplatus-henkeli>
18. <http://www.iucnredlist.org/details/172943/0>
19. <http://www.geocities.ws/reptiluvr/upietschmannicaresheet.htm>
20. <http://vitawater.ru/terra/auth-mat/edmonds/uroplat.shtml>
21. <http://zoopitomec.org.ua/p14972867-ploskohvostyj-gekkon-ebenaui.html>
22. <http://www.iucnredlist.org/details/172792/0>
23. <http://clasbio.ru/classification.php?id=80224>
24. <http://reptile-database.reptarium.cz/species?genus=Uroplatus&species=ebenaui>
25. <http://www.uroplatus.org/species-index/alluaudi-group/uroplatus-guentheri>
26. <https://sites.google.com/site/geckosincorporated/home/uroplatus-guentheri>
27. <http://www.iucnredlist.org/details/172927/0>
28. <http://reptile-database.reptarium.cz/species?genus=Uroplatus&species=guentheri>
29. <https://www.facebook.com/media/set/?set=a.143704052354560.28427.128484257209873&type=3>
30. http://reptile-database.reptarium.cz/species?genus=Uroplatus&species=alluaudi&search_param=%28%28search%3D%27uroplatus%27%29%29
31. https://www.researchgate.net/publication/237417879_A_new_finding_of_Uroplatus_alluaudi_in_north-eastern_Madagascar_widens_considerably_its_distribution_range_Reptilia_Gekkonidae
32. https://www.facebook.com/groups/680399992022543/?ref=br_rs
33. https://www.facebook.com/groups/492381257621395/?ref=br_rs

34. https://www.facebook.com/groups/434567046579435/?ref=br_rs
35. https://www.facebook.com/groups/85320967470/?ref=br_rs
36. https://www.facebook.com/groups/1678572839088786/?ref=br_rs
37. https://www.facebook.com/groups/543658942405620/?ref=br_rs

